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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,330	07/25/2003	Tao T. Tao	T0457.70019US00	2277

7590 03/05/2009
Timothy J. Oyer, Ph.D.
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Boston, MA 02210

EXAMINER

MARTIN, ANGELA J

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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03/05/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/627,330

Applicant(s)

TAO ET AL.

Examiner

ANGELA J. MARTIN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 116-120, 123-131, 133-140 and 142-145 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 116-120 and 123-131, 133-140, 142-145 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

This Office Action is responsive to the Amendment filed on December 4, 2008. The Applicant has amended independent claims 129 and 138; and canceled claims 132 and 141. However, the rejection is made final for the following reasons of record.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 129, 116-120, 123-128, 130-132, 135-141, 144, 145 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koch, DE 4004220 (translation in Applicant's IDS), in view of Teruhisa et al., GB2278010 (Applicant's IDS).

Rejection of claims drawn to an electrochemical device.

Koch teaches an electrochemical device comprising an anode which is chemically rechargeable, wherein at least a portion of the anode is liquid ("molten metallic mass") at a temperature at which the anode is operated (p. 1, para. 1-2). It teaches the anode is operable at a temperature of less than about 1500, 1300, 1000 degrees C; about 300-1500, about 300-1300 degrees C (p. 5, para. 1). It teaches the anode is chemically rechargeable comprising tin metal (p. 1, para. 1-2). It teaches the

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anode comprises liquid (molten) tin at a temperature at which the anode is operated (p. 5, para. 1). It teaches a source of fuel exposable to the anode (p. 3, para. 4). It teaches the fuel, when exposed to the anode, is in contact with the anode (p. 3, para. 4). It teaches the device is capable of producing electricity in the absence of fuel (col. 2, para. 1).

Teruhisa et al., teach the electrolyte is a solid-state electrolyte (p. 3, last para.). It teaches the electrolyte has a formula of ZrO_2 (p. 5, Example 1). It teaches a cathode in ionic communication with the electrolyte (p. 5, Ex. 1). It teaches the cathode is a solid-state cathode (p. 5, Ex. 1). It teaches the cathode is a metal oxide (p. 5, Ex. 1). It teaches the cathode comprises a metal; platinum (p. 3, para. 7). It teaches the fuel is in contact with the anode (p. 3, last para. to p. 4, para. 1). It teaches the device is capable of producing electricity in the absence of fuel (p. 13, para. 2)

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Teruhisa et al., into the teachings of Koch because the electrochemical device would be more efficient by chemically recharging the anode, as described in Teruhisa et al. Additionally, the cathode material described in Koch is platinum, as it is in Teruhisa et al.

3. Claims 133, 134, 142, 143 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koch, DE 4004220 (translation in Applicant's IDS), in view of Badwal et al., U.S. Pat. No. 5,942,349, and further view of Breault et al., U.S. Pat. No. 4,824,739.

Koch teaches an anode and device as described above.

Koch does not teach the device is self-repairing; device comprises a sealant precursor.

Badwal et al., teach the device is self-healing (col. 3, lines 42-45).

Breault et al., teach a sealant precursor.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Badwal et al., into the teachings of Koch because it would be a protective advantage and advantageous to the life of the electrochemical device if it were able to repair itself. In addition, a sealant precursor is advantageous in order to have more flexibility in the placement of the seals throughout the device.

Response to Arguments

4. Applicant's arguments filed 12/4/08 have been fully considered but they are not persuasive. Additionally, Applicant argues that Horita (Teruhisa) does not teach a device capable of producing electricity in the absence of fuel as described on p. 13, para. 2. However, p. 13, para. 2 of Horita teaches:

"The conventional electrode, such as nickel, or fuel promotes oxidation of the fuel without being changed itself by oxidation and reduction and acts to allow electrical charges to move, thereby collecting electricity. However, in the vanadium carbide electrode of the present invention, the oxidation of fuel seems to be carried out through the oxidation and reduction of the vanadium carbide. In other words, it can be said that

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the zirconia surface and the graphite rod used for collecting electricity are electrodes and vanadium carbide serves rather as the fuel. “

In response to applicant's argument that the references cannot be combined, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In response to applicant's argument that the prior art of record is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is (571)272-1288. The examiner can normally be reached on Monday-Friday from 10:00 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJM
Examiner, Art Unit 1795

/PATRICK RYAN/

Supervisory Patent Examiner, Art Unit 1795